pline to stand at a bedside keeping one's eyes busy and mind on the sensory input has become one of the lost arts. It's a pity, because the joy goes with it. On the other hand, there is no reason why those skills cannot be developed in a home study program. It is a skill that the best clinicians have, and I am pleased that Dr Miller has detailed the Holmesian connection.[1]

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**REFERENCE**

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TO THE EDITOR: Contrary to popular belief,[1] the extraordinary gift of Sherlock Holmes was not his ability to deduce (to reason from general theories to particular facts), but to induce (to reason from facts to theories). Compared with his ability to induce, Holmes's ability to deduce was quite ordinary. For example, given the general premise that all unicorns have a single horn, Holmes—and the average 10-year-old child—could readily deduce that any particular unicorn has a single horn.

The ability for induction is characteristic of skilled medical diagnosticians, but medical diagnosis also entails deduction and observation. Consider the logical sequence of evaluating a patient:

A set of diagnostic possibilities—the differential diagnosis—is generated by induction from observed facts. From each potential diagnosis, additional findings are predicted by deduction. Then, the predictions are tested against observed data (for example, laboratory results or response to treatment) to support or rule out the diagnosis.

The distinction between deduction and induction is profound; it is equivalent to the difference between hindsight and foresight. Because he wrote with hindsight, Conan Doyle sprinkled clues he had deduced after the fact; clues contrived to perplex readers who—together with real detectives and physicians—must experience mysteries with foresight. Holmes, on the other hand, enjoyed the same perspective as Conan Doyle, without which his successful inductions were no more than lucky guesses; the data he induced from can be explained by any number of alternative hypotheses.

Because deduction can be probative but induction can prove nothing, physicians have long sought deductive methods of diagnosis; for example, collecting enough data to be conclusive and seeking pathognomonic signs. These wished-for methods are based on the premise that diagnostic categories can be completely defined as a collection of their known elements. However, disregarding identities (such as a tiny head equals microcephaly), completely defined categories and pathognomonic signs are merely imaginary products of inadequate knowledge.

In the ideal universe of scientific taxonomy, diagnostic categories comprise all facts pertaining to an illness—whether the facts are known or not. In the real world of clinical medicine, however, the known diagnostic categories cannot be more complete than the set of known facts—a set that is not only incomplete, but partially incorrect as well. In former days, for example, bizarre behavior, delusions and disordered thinking were diagnostic of witchery, but contemporary knowledge and diagnostic theories do not accommodate witchery. Similarly, contemporary diagnostic categories will be replaced, expanded, narrowed or deleted in the future because of enhanced knowledge and more sophisticated theories.

The belief in deductive methods of diagnosis encourages physicians to act as mere technicians—that is, as if findings dictate treatment with no need for diagnosis. Thus, if a person is delusional, chlorpromazine is indicated. If after treatment the person remains delusional, more chlorpromazine is indicated. The technician is blind to alternative diagnoses such as bipolar illness or drug toxicity.

Physicians cannot practice competent medicine by applying Holmes's fictional methods of diagnosis; they must recognize that both induction and deduction are needed for adequate medical assessment and treatment. Those physicians who abandon the logical foundations of their profession are charlatans, because their "science" is fictitious. Certainly, charlatans cannot reverse today's politically expedient trend of corrupting medical facilities into fix-it shops.

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## How Important Is Knowing It All?

TO THE EDITOR: As a primary care physician working in specialties (emergency medicine and family practice) that have considerable overlap with other specialties with regard to relevant medical knowledge, I do not feel the findings of Kronlund and Phillips[1] published in the April issue are very surprising. Neither are they necessarily much reflection on the competence of the physicians surveyed. They rather reflect the explosion in data relevant to the practice of medicine. I am sure this in large measure explains the increasing specialization and subspecialization of physicians. The practice of clinical medicine is usually not conceptually difficult, but human memory is simply not up to the task of "knowing it all" with the certainty required for the safe practice of medicine. Furthermore, the unique and creative aspects of human intellect (reason, assimilation, hypothesizing) are wasted in trying to do so. *Roundsmanship* too often passes for good judgment and replaces practicing the art of medicine compassionately.

I see widespread use of accessible and easy-to-use clinical computer data bases as a powerful means to free physician energy for thinking and assimilating, rather than memorizing. Such an approach will also be a major factor in alleviating one major source of residency stress—the perceived need to know it all—alluded to elsewhere in the same *WJM* April 1985 issue.[2,3] Paradoxically, I would probably end up having more facts at my finger tips using an easily accessible computer data base. At the moment I needed to know some fact and was, therefore, most interested and curious, I could ask the computer and instantly have the data sought. Consider this situation as opposed to being bogged down by the lengthy and sometimes fruitless searches of textbooks we all do, or simply cannot take the time to do, when we need to, during a busy clinic day. Too often the question is not answered, and the chance to learn and improve is lost. What is needed is a rapid,